

Attachment 1 - Materials – SMD R&A Charge

1. R&A program solicitations

ROSES solicitations top level links by year:

<http://solicitation.nasaprs.com/ROSES2016>

<http://solicitation.nasaprs.com/ROSES2017>

Lists of program elements in those ROSES solicitations by topic:

<http://solicitation.nasaprs.com/ROSES2016table3> <http://solicitation.nasaprs.com/ROSES2017table3>

Those that are interdivisional by definition are found in Appendix E at the bottom of the tables.

Those that are both interdivisional and related to research are E.3, [Exoplanets Research Program](#) and E.4 [Habitable Worlds](#).

The most recent call for Interdisciplinary Research in Earth Science is in ROSES 16: [ROSES-16 A.28 Interdisciplinary Research in Earth Science](#)

The most recent Cooperative Agreement Notice (CAN) for the Solar System Exploration Research Virtual Institute: [SSERVI CAN 2 NNH16ZDA009C](#)

The NASA Astrobiology Institute CAN, currently open at this time: [NNH17ZDA003C](#)

2. Proposal evaluation criteria

The Agency-level [NRA or Cooperative Agreement Notice Proposers' Guidebook](#), more commonly known as "the guidebook for proposers" notes that "At a minimum, the evaluation criteria against which the proposals will be judged will be those listed [Appendix D](#), although these may be supplemented by specific criteria given in the FA [i.e., the Funding announcement or solicitation] itself." Appendix D states:

"Unless otherwise specified in the FA, the evaluation criteria considered in evaluating a proposal are its relevance to NASA's objectives, intrinsic merit and its cost. The failure of a proposal to be rated highly in any one of these elements is sufficient cause for the proposal to not be selected.

Evaluation of a proposal's relevance includes the consideration of the potential contribution to NASA's mission as expressed in its most recent NASA strategic plans and the specific objectives and goals given in the FA. If an FA describes the program's relevance to the NASA strategic plans, it is not necessary for proposals to show relevance to NASA's broader goals and objectives but, rather only to demonstrate relevance to the goals and objectives of the specific goals and objectives of the FA.

Evaluation of Intrinsic Merit includes the consideration of the following factors, as applicable to the particular proposal:

- The scientific quality of the proposed project, including, but not limited to, the scientific rationale and the expected significance and/or impact of the proposed work;
- Overall technical quality of the proposed work, including, but not limited to, the quality of the management plan and project timeline for carrying out the work and the effectiveness and resilience of the proposed experimental designs, methods, techniques, and approaches for achieving the proposed goals and/or objectives;
- The qualifications, capabilities, and related experience of personnel demonstrated by the proposal (e.g., publications, delivered products, and other measures of productivity and/or expertise) that would affect the likelihood of achieving the objectives.
- Facilities, instruments, equipment and other resources or support systems presented in the proposal that would affect the likelihood of achieving the proposed objectives.

Evaluation is against the state-of-the-art. Review panels are instructed not to compare proposals to each other; any comparative evaluations are conducted by NASA program personnel.

Evaluation of the cost of a proposed effort may include the reasonableness of the proposed cost, as well as whether costs are allowable and allocable to the project. The comparison of the proposed cost to available funds is performed by NASA program personnel and is not part of the peer review process."

The SMD research NRA is Research Opportunities in Space and Earth Sciences (ROSES). The ROSES-17 summary of solicitation, Section VI. (a) "Evaluation Criteria" cites the guidebook and further clarifies some aspects of the evaluation of ROSES proposals as follows:

"As stated in the [NASA Guidebook for Proposers](#), proposals are ordinarily evaluated on three criteria: intrinsic merit, relevance, and cost. Despite the implication of some kind of average when the guidebook states that the three criteria are of approximately equal weight, a ROSES proposal that is not relevant is not selectable, no matter what the scores for Merit or Cost, or mean or median of all three criteria scores. Indeed, SMD may return without peer review a proposal deemed to be not relevant. The manner in which SMD evaluates ROSES proposals for relevance, and cost varies from program to program. ROSES proposals may be scored by peer reviewers for all three criteria on a full scale, or the proposal may be scored on a full scale only for merit, with relevance and/or cost evaluated on an abridged scale, or with only comments provided for relevance and/or cost, or the peer review panel may not be asked to comment on relevance and cost at all.

Note the following specific points:

- Some of the program elements discussed in Appendices A through E will give specific factors, based on the solicited research objectives, which will be considered when evaluating a proposal's science and/or technical merits and/or its relevance to program objectives.
- Unless otherwise stated, relevance will be judged by whether the proposal addresses goals and objectives for that ROSES Appendix and/or specific program element, rather than NASA's broader goals. This focus on relevance to the program element

supersedes the instructions in the [NASA Guidebook for Proposers](#). Unless otherwise stated in the program element, relevance of the proposed work is judged based on whether the work proposed is deemed to be relevant, independent of whether or not it includes an overt, clear and direct statement of relevance. That is, unless otherwise stated in the program element, no proposal will be returned as noncompliant for lack of a relevance section or statement, and inclusion of a relevance section or statement is no guarantee that the proposal will be judged relevant. Please read the program elements carefully. See also Section I(h).

- Cost data for U.S. proposals may be evaluated both by peer review (for reasonableness) and by NASA program personnel (vs. the available budget). Proposers must follow the budget requirements in Section IV (b) iii and Table 1 of this document. When evaluating the cost reasonableness of the proposals, reviewers will assess whether the proposed level of effort (i.e., labor FTEs) and the proposed other direct costs (i.e., supplies, equipment, travel) are commensurate with those required to accomplish the goals of the investigation. Salary levels, fringe benefit rates, and overhead rates are not part of that evaluation, and will be hidden from peer reviewers."

3. Starting Point Working Definitions

High-Impact: Research whose outcome, if confirmed, would have a large and measurable effect on current thinking, methods, or practice.

High-Risk: Research that tests novel and significant hypotheses for which there is scant precedent or preliminary data or which run counter to the existing scientific consensus.

Multidisciplinary: Research in which contributions from two or more different disciplines *are independently or sequentially* applied, *providing additive contributions* to the solution of a common problem.

Interdisciplinary: Research in which contributions from two or more different disciplines are *jointly applied, providing interactive contributions* to the solution of a common problem.

Interdivisional: Research that simultaneously advances the strategic objectives of more than one SMD Division. Such research may be multi- or inter-disciplinary but need not be.

The committees are encouraged to consider improving these definitions.

4. SMD R&A program statistics (e.g. proposal selection rates, 2008-2015)

Most current data: <https://science.nasa.gov/researchers/sara/grant-stats>

5. SMD policy documents

The SARA library: <https://science.nasa.gov/researchers/sara/library-and-useful-links>

The library has the following useful links:
[Peer Review Conflicts of Interest](#) (SPD-01)
[SMD Peer Review Policy](#) (SPD-22)

[NASA 2014 Strategic Plan](#)
[NASA 2014 Science Plan](#)

6. *An Enabling Foundation for NASA's Earth and Space Science Missions* (2010)

The 2010 NRC report *An Enabling Foundation for NASA's Earth and Space Science Missions* (also known as the Fisk report) highlighted the importance of R&A programs to all of the activities undertaken by NASA's Science Mission Directorate (SMD).

A summary of this report can be found here: <https://www.nap.edu/read/12822/chapter/2>
The full report can be downloaded here: <https://www.nap.edu/catalog/12822/an-enabling-foundation-for-nasas-earth-and-space-science-missions>

This report was based on a NASA SMD charge that asked the committee to address two questions:

1. Are the PSD R&A program elements appropriately linked to, and do they encompass the range and scope of activities needed to support the NASA strategic objective for planetary science and the Planetary Science Division's science goals, as articulated in NASA's 2014 Science Plan?
2. Are the PSD R&A program elements appropriately structured to develop the broad base of knowledge and broad range of activities needed both to enable new spaceflight missions and to interpret and maximize the scientific return from existing missions?

The 2009 report recommended, in part, that

NASA should ensure that SMD mission-enabling activities are linked to the strategic goals of the agency and of SMD and that they are structured so as to: encompass the range and scope of activities needed to support those strategic goals; provide the broad knowledge base that is the context necessary to interpreting data from spaceflight missions and defining new spaceflight missions; maximize the scientific return from all spaceflight missions; supply a continuous flow of new technical capabilities and scientific understanding from mission enabling activities into new spaceflight missions; and enable the healthy scientific and technical workforce needed to conduct NASA's space and Earth science program. (p. 47)

7. *Review of the Restructured Research and Analysis Programs of NASA's Planetary Science Division* (2017).

This 2017 report reviewed the restructuring of the research and analysis program of the Planetary Science Division and was established to determine if the new structure appropriately aligns with the agency's strategic goals, supports existing flight programs, and enables future missions. This report explores whether any specific research areas or interdisciplinary groups that are critical to NASA's strategic objectives for planetary science and PSD's science goals are not supported appropriately in the current program or have been inadvertently disenfranchised through the reorganization.

The full report can be found at: <https://www.nap.edu/catalog/24759/review-of-the-restructured-research-and-analysis-programs-of-nasas-planetary-science-division>.

This report was based on a NASA SMD charge that asked the committee to address two questions:

1. Are the PSD R&A program elements appropriately linked to, and do they encompass the range and scope of activities needed to support, the NASA Strategic Objective for Planetary Science and the Planetary Science Division Science Goals, as articulated in the 2014 *NASA Science Plan*?
2. Are the PSD R&A program elements appropriately structured to develop the broad base of knowledge and broad range of activities needed both to enable new spaceflight missions and to interpret and maximize the scientific return from existing missions?

The report concluded, in part, that

In response to the first of the two questions in the charge, the committee finds that the current R&A structure is properly aligned with scientific priorities of the decadal survey and the Planetary Science Division 2014 science goals. In particular, the committee finds that, despite early community concerns, keyword analyses of the type of task, target body, and science discipline revealed no evidence that restructuring has led to deleterious effects on the planetary science R&A program or on specific segments of the community. Furthermore, in response to the second of the two questions in the charge, the committee finds that, in general, the structure of the program elements will allow NASA PSD to prepare for future spaceflight missions and to maximize science value from existing missions. (p. 2)